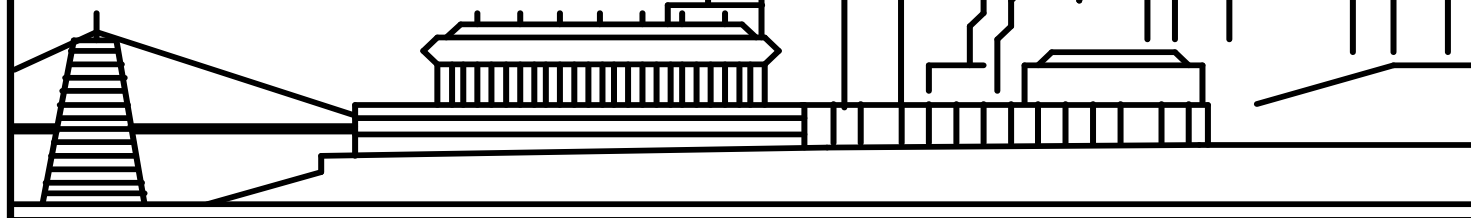




**INSTITUTE OF
ELECTRICAL &
ELECTRONICS
ENGINEERS, INC.**



FEBRUARY 1993

IEEE CINCINNATI SECTION NEWSLETTER

The
ENGINEERS and SCIENTISTS of CINCINNATI (ESC)
invites you to attend the
58th ANNUAL MEETING

the highlight of
ENGINEERS WEEK

to be held on Thursday, February 18, 1993
at the HARLEY HOTEL, Kenwood (I-71 & Montgomery Rd.)

6:00 P.M. Social Hour
7:00 P.M. Dinner-Choice of Sliced Sirloin
8:00 P.M. Presentation of Awards

**DISTINGUISHED ENGINEER
DISTINGUISHED SCIENTIST
YOUNG ENGINEER
YOUNG SCIENTIST**

8:30 P.M. Speaker - Terry E. Bruck

Terry E. Bruck holds a Bachelors Degree in Electrical Engineering from Virginia Polytechnic Institute and a Masters Degree from Xavier University.

He is Vice-President of Electric Operations at The Cincinnati Gas & Electric Company. He began his very successful career at CG&E in 1969 as an Engineer in CG&E's System Operations Division.

Mr. Bruck is on the Board of Directors at the Institute of Advanced Manufacturing Sciences (IAMS). He is also on the Coordination Review Committee with the East Central Area Reliability Council (ECAR). He is a key member of the CG&E/PSI pre-merger committee.

He will share with us his insights concerning the planned merger between CG&E and PSI Resources, Inc.: What do we need to know, and how will this \$2.6 billion merger impact Greater Cincinnati?

Contact Dee Scott at (513) 385-9446 for more details. Please phone RESERVATIONS in by FEBRUARY 15, 1993

Tickets will be held at the ESC reservations table at the Harley Hotel. After calling Dee, please make reservation checks payable to ESC and mail to:

ESC
c/o Dee Scott
5654 Cheviot Rd., No. 9
Cincinnati, Ohio 45247

Spouses are encouraged to attend.

CHAIRMAN'S MESSAGE

By JIM EVERLY

A big round of applause goes to Eric Wright for serving as Cincinnati Section Chairman for the last two years. Great job, Eric!! I appreciate the smooth transition. Also, if you are wondering, the following are the results of the election for 1993 Section Officers:

Chairman	Jim Everly
Vice Chairman	Bill Lohner
Secretary	Steve Olenick
Treasurer	Orest Melnyk
Member-at-Large	Ron Harbaugh (Elected 1992)
Member-at-Large	Robert Haas (Elected 1991)

As always the telephone numbers of each officer are listed on the outside of the newsletter, so don't hesitate to call them with any comments or suggestions.

Just for your information, the Executive Committee will meet during the first part of February. Tentative programs for 1993 are:

January	National Aerospace Plane
February	Annual ESC Awards Banquet
March	Applications of Fuzzy Logic to Industrial Controls
April	Nikola Tesla-Genius of AC
May	Tour
June	Annual Golf Outing
September	Normally a tour
October	??
Nov./Dec.	??

Notice that the meetings for September through the end of the year are undefined. Feel free to contact me if you have any suggestions for programs or tours. Don't forget the ESC banquet on Thursday, February 18, 1993 at the Harley Hotel. Be sure to introduce yourself and give me your ideas for improving the Cincinnati Section of the IEEE.

INVENTING the DIODE and the TRIODE

by Dick Reiman, Historian

The emission of electrons from a heated surface such as a diode or triode cathode was probably first observed by Thomas Edison in 1883. In his experiments with carbon filament lamps, he noted that carbon was deposited on

the inner surface of the bulb when the filament was operated at a high voltage. He suspected that some unknown electrical force was the cause and he confirmed this by connecting a small metal plate suspended inside the bulb to an external battery. When the plate was connected to the positive battery pole, he observed a flow of current with a sensitive current-measuring instrument. He had created the first diode. The electron had not yet been discovered (by J.J. Thompson in the 1890's at Cambridge University) and Edison filed a patent application, but pursued it no further.

The discovery of a practical application of the diode was made by an English engineer, Sir John Ambrose Fleming, in 1904, as a consultant to the Marconi Wireless Telegraph Company, to improve transmitting and receiving apparatus. If the alternating current produced by electromagnetic waves of the wireless could be converted to direct current by rectifying it, a more sensitive detector of radio signals would result. Fleming had read of Edison's work and thought the diode might be the answer. Fleming built a number of diodes but these were only modest improvements over the crystal detectors that had been used previously. Nevertheless, Fleming received recognition for his device (which was called a "Fleming Valve"), but what was needed was an amplifier. The amplifier was the triode, a diode with a grid structure added. By applying a low-power input signal to the grid, an output signal of much greater power could be produced at the anode. The electron tube could now be used in communication and broadcasting systems.

Lee DeForest of Council Bluffs, Iowa, son of a Congregational minister and a graduate of the Sheffield Technical School of Yale University, became the inventor of the triode in 1906. DeForest was also trying to improve radio receivers by amplifying. Surprisingly, DeForest did not have a clear idea of how the triode worked since he believed that amplification was due to or aided by the gas in the tube. This faulty explanation caused him trouble in patent litigations which followed his invention.

Spark transmitters used by Hertz and Marconi were of low efficiency and had a wide band of frequency components which made a terrible racket (the radio operator on board ships was called "Sparks"). English physicist Sir Oliver Lodge discovered in 1897 that circuits which were tuned to resonate at the transmitter's frequency could smooth the energy bursts into a continuous wave. The receiver thereby could also be tuned to a single frequency. This circuitry for receivers was the invention of the superheterodyne circuit for radio receivers by Maj. Edwin Howard Armstrong. AM radio broadcasting would follow.

FUTURE MEETINGS

March 18, 1993 at IAMS:
APPLICATIONS OF FUZZY LOGIC
TO INDUSTRIAL CONTROLS
presentation by Dr. Al Scheide

April 22, 1993
NIKOLA TESLA, GENIUS OF AC
presentation by Richard H. Engelmann &
Richard J. Reiman

The tentative itinerary of the above
meetings is as follows:

5:00 P.M. Social Hour
6:00 P.M. Dinner
7:00 P.M. Presentation

8:30 P.M. Adjourn

Announcements will be forthcoming in future issues
of this newsletter.

Jim Everly - Chairman	777-7129 (Home); 556-4224 (Fax), 556-4241 (Office)
Bill Lohner - Vice Chairman	385-7268
Orest Melnyk - Treasurer	397-9212
Steve Olenick - Secretary	573-6555
Bob Morrison - Editor	287-3697 (Office), 287-3698 (Fax)

FEBRUARY 1993

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The Technical Societies Council
University of Cincinnati
641B Baldwin Hall
Mail Location 18
Cincinnati, OH 45221

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